

APPENDIX

1. (Once Amended) A non-blocking mechanical fiberoptic matrix switch,
comprising:

N input optical fibers;

M output optical fibers;

a first plurality of stages each supporting an end portion of a corresponding one of
the N optical fibers;

a second plurality of stages each supporting an end portion of a corresponding one
of the M optical fibers;

means for translating the stages along a plurality of overlapping paths to align a
facet of a selected one of the N input optical fibers with a facet of a selected one of the M
output optical fibers; and

a plurality of collimating lenses, each for transmitting a beam of light between
aligned input and output fibers.

2. (Original) The switch of Claim 1 wherein the end portions of the fibers are each
translatable along corresponding paths that define orthogonal X and Y axes.

3. (Canceled)

4. (Original) The switch of Claim 1 where $N = M$.

5. (Once Amended) The switch of Claim 1 wherein an end portion of each fiber has a
lens attached thereto.

6-7. (Canceled)

8. (Once Amended) The switch of Claim 1 and further comprising a central panel
having a plurality of holes, each having a lens positioned therein.

9-10. (Canceled)

11. (Once Amended) A method of switching beams of light directly between selected
ones of N input optical fibers and M optical output fibers, comprising the steps of:
supporting an end portion of each of a plurality of N input optical fibers for

independent translational movement along a first set of paths;
supporting an end portion of each of a plurality of M output optical fibers for
independent translational movement along a second set of paths that overlap the first set of
paths; and
translating a selected one of the N input optical fibers and a selected one of the M
output optical fibers to align the fibers to permit a light beam to be transmitted from the
selected input optical fiber to the selected output optical fiber; and
collimating each beam of light between aligned input and output fibers.

12. (Original) The method of Claim 11 wherein the end portions of the input optical
fiber move along corresponding X axes and the end portions of the output optical fibers
move along corresponding Y axes orthogonal to the X axes.

13-15. (Canceled)

16. (Original) The method of Claim 11 wherein $N = M$.

17. (Original) The method of Claim 1 wherein all of the fibers are simultaneously
translatable along their corresponding paths.

18. (Original) The method of Claim 11 and further comprising the steps of detecting a
position of each of the fibers as it translates along its corresponding path and controlling
the translation of each of the fibers in accordance with the detected position.

19. (Canceled)

20. (Once Amended) A non-blocking mechanical fiberoptic matrix switch, comprising:
N input optical fibers;
M output optical fibers;
a first plurality of stages each supporting a ferrule surrounding an end portion of a
corresponding one of the N optical fibers;
a second plurality of stages each supporting a ferrule surrounding an end portion
of a corresponding one of the M optical fibers;
means for translating the stages along a plurality of orthogonal X and Y axes to
align a facet of a selected one of the N input optical fibers with a facet of a selected one of

the M output optical fibers;

70 a central panel having a plurality of holes, each hole being sized for having the
72 ferrule surrounding a selected one of the N input optical fibers inserted into a first end of a
74 selected hole in order to mate the facet of the selected one of the N input optical fibers
 with the facet of the selected one of the M output optical fibers having the ferrule
 surrounding its end portion inserted into a second end of the selected hole; and
 means for moving the ferrules relative to the stages along a plurality of Z axes
76 generally perpendicular to the X and Y axes to mate and un-mate the facets of the selected
 input and output optical fibers.

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21-25. (Canceled)

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26. (Previously Added) The switch of Claim 20 and further comprising spring means
82 for biasing the ferrules to mated positions.

84 27. (Previously Added) The switch of Claim 20 wherein the holes in the central panel
 are tapered to facilitate alignment and insertion of the ferrules into the holes.

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28. (Previously Added) The switch of Claim 20 wherein the means for moving the
88 ferrules includes a plurality of solenoid actuators.